

louder more slurred song of the Solitary Cacique served to readily distinguish it from the Ecuadorian Cacique.

Acknowledgements

This research was funded by grants from the Neotropical Biological Diversity Program, U.S. National Museum of Natural History, Washington, DC, and sponsored by the Universidad Mayor de San Marcos, Lima, Peru. T. L. Erwin assisted in the field work, and early drafts of the article were critically reviewed by J. V. Remsen and T. A. Parker.

This article is no. 11 of the Biological Diversity in Latin America (BIOLAT) contribution series.

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Addresses: Grace Servat, Museum of Natural History, San Marcos University, Apartado 140434, Lima 14, Peru. David L. Pearson, Department of Zoology, Arizona State University, Tempe, Arizona 85287, U.S.A.

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Female and first-year male plumages of paradise whydahs *Vidua interjecta*

by Robert B. Payne

Received 13 November 1990

The brood parasitic West African Broad-tailed Paradise Whydah *Vidua interjecta* occurs across Upper and Lower Guinea through northeastern Zaire. Its distribution is associated with its foster species, the Red-winged Pytilia *Pytilia phoenicoptera* (Nicolai 1964, Hall & Moreau 1970, Payne 1985). Although *V. interjecta* is known from museum skins and field observations of males in breeding plumage, the female and nonbreeding male have not been described. The plumage of females and nonbreeding males may be as significant as that of the males in identification and in evaluating species relationships among the whydahs (Payne 1971).

Vidua interjecta (Grote, 1922) was described from a male taken in breeding plumage in Central African Republic near Mbaiki, where both *Pytilia phoenicoptera* and *P. hypogrammica* occur (Carroll 1988). *Vidua longicauda* (Chapin, 1922), described later (see Chapin 1929, Bannerman 1949) from the Uelle area, Zaire, where Chapin also collected *P. phoenicoptera*, is considered conspecific with *V. interjecta*. *V. interjecta* has a more mesic, southern distribution in West Africa than the widespread Paradise Whydah *V. paradisaea* (subspecies *orientalis* from Sudan and Chad, *aucupum* from Nigeria to Senegal) and its foster species the Melba Finch *Pytilia melba*.

Female *V. interjecta*

A female whydah was tentatively identified as *V. interjecta* by her association in a pet shop with a male *V. interjecta*. Both birds were of unknown origin, imported in 1987 from West Africa through Senegal. The whydahs were photographed, and colours of bill, feet and eye were noted and compared with a reference (Kornerup & Wanscher 1968) including Methuen colour names and codes. Paradise whydahs, like most whydahs, mimic the songs of their foster species (Nicolai 1964, Payne 1973a,b, 1980, 1985, 1990). The male was tape recorded. His songs included mimetic phrases identical with the songs (*to-wit-to-wit*) and calls (*pik*) of *P. phoenicoptera* that I have recorded both in captivity and in the field at Yankari National Park, Nigeria (see Güttinger & Nicolai 1975, Crick & Marshall 1981, Payne 1985). The whydahs were observed in an aviary through 3 years. The two associated together; their foster species was not present. The male completed two cycles of moult then was saved as a study skin (UMMZ 228,180) as was the female (UMMZ 228,179).

In breeding plumage the male had long central (R2) rectrices broad (not tapered) near the tip, 304 mm in length, 26 mm high (unflattened and perpendicular to the feather shaft) measured 60 mm from the tip and 26 mm at 120 mm from the tip. The ornate tail was similar in form to the holotypes of *V. interjecta* (Berlin Museum no. 950, taken near Mbaiki, Central African Republic) and *V. longicauda* (AMNH 161,938 from Faradje, Uelle District, Zaire) and in three breeding male specimens in UMMZ taken in 1968 near Zaria, Nigeria (Payne 1985). Plumage of nape and breast was dark brownish red (Methuen 8C7), the belly was pale yellow (4A3) extending over 66% of the ventral surface. The nape was dark and the same colour extends across the upper breast, as occurs in *V. interjecta* and not in the paler Slender-tailed Paradise Whydah *V. togoensis*. The wing (flattened) is 79.6 mm, the tail (excepting the two central pairs of rectrices) is 61 mm, the bill from head is 10.1 mm, bill from nostril 7.3 mm, and the tarsus 17.1 mm. The bill was black. The tarsi were dark grey (8D3) on the lateral surfaces to pinkish (8B3) on ankle and toes. No swellings or mites were apparent; the pale colour may have been due to low hormones (colours were described after four months in captivity), though I have not noted pale colours in captive *V. p. paradisaea* kept over years.

The female plumage is streaky above. The pattern on the head has a pale buff (Methuen 5A3) crown streak over a dark brown side crown streak, bordered by a pale streak (5A3), with a dark brown streak through

TABLE 1
Variation in wing length (mm) of paradise whydahs

	Sex	n	Range	Mean \pm SD
<i>V. p. paradisaea</i> ¹	m ³	54	74–81	77.91 \pm 1.55
<i>V. p. paradisaea</i> ²		98	76–81	78.66 \pm 1.64
<i>V. p. orientalis</i>		68	73–80	77.43 \pm 1.93
<i>V. p. aucupum</i>		62	72–80	75.54 \pm 1.88
<i>V. interjecta</i>		39	76–82	78.05 \pm 1.52
<i>V. togoensis</i>		15	74–78	76.60 \pm 1.59
<i>V. obtusa</i>		137	81–87	83.30 \pm 1.47
<i>V. p. paradisaea</i> ^{1,4}	f	11	71–76	74.36 \pm 1.43
<i>V. p. paradisaea</i> ⁵		18	73–79	76.11 \pm 1.81
<i>V. p. orientalis</i> & <i>aucupum</i> ⁶		11	71–74	73.00 \pm 1.10
<i>V. interjecta</i> ⁷		3	74–76	75.00
<i>V. obtusa</i> ⁸		11	77–84	79.73 \pm 2.42

¹Sudan (eastern Equatoria and eastern border), Ethiopia and Somalia

²Kenya to South Africa (Payne 1980)

³males in breeding plumage, identifiable by size and shape of central rectrices, and colours of nape and breast

⁴females identified from association with males in range of *V. paradisaea* in west and northeastern Africa and outside the ranges of *V. interjecta*, *V. togoensis* and their foster species

⁵Springbok Flats, Transvaal (cf. Payne 1971)

⁶excluding Gambia, where both *Pytilia melba* and *P. phoenicoptera* occur

⁷this paper

⁸Mwinilunga District, northwestern Zambia (cf. Payne 1971)

the eye. The face otherwise is unmarked and buffy (near 5A3). The plumage is streaked black and light brown (5D5) above and greyish orange (5B3 or darker) below on the breast, and the belly is whitish. The outer rectrices have a 1–2 mm wide white border. In life the bill was light orange (6A5), the feet were pastel red (7A4), and the iris was slaty brown or “reddish brown” (8E4).

Wing length of the female *V. interjecta* is 76 mm, larger than the female *V. p. orientalis* and *V. p. aucupum* from Senegal, Nigeria, Niger, Chad and Sudan in BMNH, FMNH, Paris and Stuttgart museums, more similar to female *V. p. paradisaea* from Ethiopia and Somalia in BMNH, FMNH, USNM and Frankfurt Museum, and smaller than female *V. obtusa* (Payne 1971; Table 1). The tail is 58 mm, graduated as in other paradise whydahs; the outer rectrices are 50 mm. The bill from head is 10.4 mm, the bill from nostril 8.0 mm, and the tarsus 15.2 mm. The bill and tarsi do not differ in size from other paradise whydahs measured for comparison.

The plumage is similar to other paradise whydahs with a dark line behind the eye as in *V. obtusa*, *V. p. aucupum* and *V. p. orientalis*, and not extended into a ‘C’ pattern behind the ear as in *V. p. paradisaea* from east and southern Africa (Payne 1971). The edges of the dorsal feathers are greyish brown, not yellowish or buffy as in some female *V. p. orientalis* and *V. p. aucupum* in fresh plumage. The most distinctive feature of the female was the reddish colour of the legs and bill. No female *V. p. orientalis* or *V. p. aucupum* had a reddish bill; museum specimens with bill

colour described on the label were "horn colour", "dark brown", "brown, tip dark, base beneath whitish" and "brown tip blackish base, [lower] m[andible] whitish". Female *V. p. paradisaea* have blackish bills (grey in the nonbreeding season) and brownish-grey tarsi, and female *V. obtusa* have a light grey bill and grey tarsi, where colours were noted at the time of collection (Payne 1971). No female specimens from this or more recent series in UMMZ show reddish at present.

Two other female specimens are known from areas with male *V. interjecta* and its foster species *P. phoenicoptera*. One was taken in an area where male *V. interjecta* in breeding plumage is known, and no other paradise whydahs, at Korhogo, Ivory Coast, on 22 February 1968 by J. M. Thiollay (Paris Museum 1969–250). A male *V. interjecta* in breeding plumage was collected 35 km E of Korhogo (LACM 71208) on 7 October 1968, by M. Ailanijan and F. S. Blanchard; the tail is broad to the tip and measures 290 mm, the nape is brownish orange (6C8) unlike *V. togoensis*, and the breast is paler than in *V. p. aucupum*. Wing length of the Korhogo female is 74 mm. Plumage is streaky brown above, similar to that of the UMMZ female. Bill colour, not noted on the label, was reddish horn (Methuen colour was not noted) when the Korhogo female was examined in 1985; the feet were pale.

The second field specimen of a female is København Museum 25.088, taken by H. Madsen on 24 April 1927 at Bamako, Mali. The only pytilia known in this area of Mali is *P. phoenicoptera* (Hall & Moreau 1970; RBP examination of specimens in museums), and the only male paradise whydahs in full breeding plumage (and not with growing central rectrices in sheath) from southwestern Mali are *V. interjecta*. These males, in the Paris Museum, have been called *P. paradisaea aucupum* (as cited in Hall & Moreau 1970, who accepted the identifications in correspondence). In fact they are *V. interjecta* in breeding plumage; the Bamako male (Paris 623,854) has a tail of 340 mm, 80 mm longer than the longest-tailed *V. p. aucupum*. Wing length of the Bamako female is 75 mm. The female has a streaky brown dorsal plumage similar to that of UMMZ 228,179. Bill colour was not noted by the collector, but when examined in 1990 it was pastel red (Methuen 7A4), the feet were pale (Methuen 6AB2, orange white to orange grey). The reddish bill colours of the Korhogo and Bamako females are consistent with the interpretation that UMMZ 228,179 is *V. interjecta*.

Nonbreeding male V. interjecta

A nonbreeding (testes 1 mm) male paradise whydah (UMMZ 217,399) was collected along a stream 8 km NW of Zaria, Nigeria, at 11°10'N, 07°40'E, on 3 September 1968, at a site where *V. interjecta* in breeding plumage had displayed for at least two weeks. At that time the only paradise whydah species known at Zaria was *V. interjecta*, and the only pytilia was *P. phoenicoptera* (Fry 1966). *P. melba* was observed in the same locality in 1979 after further deterioration of habitat (Gartshore 1982).

The Zaria male *V. interjecta* has a wing of 76 mm, tail 58 mm and graduated with the outer rectrices 50 mm, bill 8.9 mm from head, 6.9 mm from nostril, and tarsus 15.6 mm. It weighed 20 g. The bill was orange-yellow with blackish culmen, the feet were fleshy grey, the iris was dark

brown (Methuen colours were not noted). The skull was 75% unpneumatized. As Chapin (1954) and Friedmann (1960) mentioned, viduines generally do not completely pneumatize the skull. In *Vidua chalybeata*, first-year males are less than 50% and older males more than 50% pneumatized (Payne 1973b), and my captive males and females have completely pneumatized skulls only after four years. The extent of unpneumatized dorsal area of the skull suggests that the Zaria male was a yearling. The orange bill is consistent with the reddish bill colour of the captive female and the two females taken in the field, and is unknown elsewhere in the paradise whydah species complex. Wing length is like that of male *V. interjecta* in breeding plumage; wing length overlaps among forms of paradise whydah within the range of *V. interjecta* (Table 1).

In plumage the Zaria male has a whitish crown stripe bordered by black stripes, a white stripe above the eye, a light orange-grey face (5C2) with a black 'C' mark around the ear, and a worn breast lacking the brownish yellow of first-year male *V. p. paradisaea* and *V. obtusa* in fresh plumage. The back is streaked with blackish central shaft and light brown edges (5D+5). It does not differ in pattern from nonbreeding males of other species of paradise whydahs.

Juveniles

The juvenile plumage of *V. interjecta* is unknown. A juvenile whydah (BMNH 1923.11.12.317) from Bandama in Ivory Coast may be this species or *V. togoensis*. The plumage is unstreaked light brown above (5D4) and with a greyish throat (5C3) and whitish belly. The wing is 76 mm, the tail 51 mm, and the tarsus 15.4 mm. The bill is 9.9 mm from head, 6.4 mm from nostril, and pale with a blackish tip. Specimens of paradise whydahs from Ivory Coast are few; Thiollay (1985) did not distinguish among the species. Three male specimens in breeding plumage are known, from Korhogo 35 km E (LACM 71208), Marigot (LACM 46140) and Bandama (BMNH 1923.11.12.316). The first two are *V. interjecta*, the third is *V. togoensis*. *Pytilia hypogrammica* and *P. phoenicoptera* are widespread in Ivory Coast (Thiollay 1985) and *P. melba* is known for one locality (Holyoak & Seddon 1990), but only *P. hypogrammica*, the foster species of *V. togoensis* (Nicolai 1977), is known for Bandama (Bannerman 1923; specimens in BMNH and Paris Museum), suggesting that the juvenile is *V. togoensis*. It has a reddish base of the bill and a dark tip; the original colour was not noted on the label.

The reddish bill and foot colours of female and bill of nonbreeding male *V. interjecta* may aid in identification. The characters of the females and first-year male described in the present report are consistent with recognizing *V. interjecta* as a species distinct from *V. paradisaea* and *V. obtusa*. It would be of interest to determine whether female *V. togoensis* are morphologically distinct from *V. interjecta*.

Acknowledgements

For allowing examination and lending specimens I thank the curators of the Academy of Natural Sciences of Philadelphia, American Museum of Natural History (AMNH), British

Museum (Natural History) (BMNH), Carnegie Museum, Field Museum of Natural History (FMNH), Los Angeles County Museum (LACM), Michigan State University, United States National Museum (USNM), Western Foundation of Vertebrate Zoology (Los Angeles), Mole National Park (Ghana), National Museum of Malawi (Blantyre), National Museum of Zambia (Livingstone), National Museum of Zimbabwe (Bulawayo), Museum of Comparative Zoology (Harvard), Royal Ontario Museum, Senckenberg Museum (Frankfurt), Berlin Museum (Universität von Alexander Humboldt), Museum Alexander Koenig (Bonn), Staatliche Museum für Naturkunde in Stuttgart (SMNS), Zoologisk Museum (København), Naturhistorisches Museum Wien, Zoologisch Museum (Amsterdam), Koninklijk Museum voor Midden-Afrika (Tervuren), Koninklijk Belgisch Instituut voor Natuurwetenschappen (Brussels) and Muséum National d'Histoire Naturelle (Paris). C. König (SMNS) provided photographs of the holotype of *V. p. orientalis*. Specimens in Sudan National Museum (Khartoum) were measured by S. M. Goodman. Field work was supported by the National Science Foundation and the National Geographic Society. For comments of the manuscript I thank R. E. Irwin.

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Address: Robert B. Payne, Museum of Zoology and Department of Biology, The University of Michigan, Ann Arbor, Michigan 48109, U.S.A.